I CLAIM:

1. A pressurizer for pressurizing a fluid, comprising:

at least two storage tanks, wherein, for each storage tank, said pressurizer further comprises:

a propellant entrance valve connected to and associated with said storage tank;

a propellant exit valve connected to and associated with said storage tank;

a pressurant entrance valve connected to and associated with said storage tank; and

a pressurant exit valve connected to and associated with said storage tank,

wherein each of said storage tanks is configured to be filled with said fluid under a low pressure when its associated propellant entrance and pressurant exit valves are open and its associated propellant exit and pressurant entrance valves are closed, and to be drained of said fluid under a high pressure by the force of a pressurant when its associated propellant entrance and pressurant exit valves are closed and its associated propellant exit and pressurant entrance valves are open,

wherein, for each storage tank, its associated valves are configured to be opened and closed in a cycle to sequentially fill and drain their associated storage tank of said fluid, said cycle having a cycle time,

wherein said cycles of said associated valves of said storage tanks are out of phase with each other such that at some time in which one storage tank is being filled with said fluid, at least one other storage tank is being drained of said fluid, and

wherein said cycle time for each storage tank is between 1 and 500 milliseconds.

2. The pressurizer as in claim 1, wherein said cycle time is between 1 and 250 milliseconds.

3. The pressurizer as in claim 1, wherein said cycle time is between 1 and 100 milliseconds.

4. The pressurizer as in claim 1, wherein each of said associated valves of each of said storage tanks has an open time, which is the time required for the valve to move from a fully closed position to a fully open position, and a close time, which is the time required for the valve to move from a fully open position to a fully closed position, wherein, for each storage tank and its associated valves, a sum of the following terms is less than 100 milliseconds: a) a maximum of the pressurant entrance valve open time and the propellant exit valve open time; b) a maximum of the pressurant entrance valve close time and the propellant exit valve close time; c) the pressurant exit valve open time; d) the propellant entrance valve open time; and e) a maximum of the pressurant exit valve close time and the propellant entrance valve close time.

5. The pressurizer as in claim 4, wherein said sum is less than 25 milliseconds.

6. The pressurizer as in claim 1, wherein, for each storage tank, said associated pressurant exit valve comprises a plurality of separate flow holes and a movable valving member configured to restrict flow through said plurality of separate flow holes simultaneously.

7. The pressurizer as in claim 1, wherein, for each storage tank, said associated propellant exit valve comprises a plurality of separate flow holes.

8. The pressurizer as in claim 1, wherein said associated pressurant exit valve for each storage tank comprises at least one flow hole and a movable valving member configured to restrict flow through said flow hole, wherein a shortest flow distance from said movable valving member to a meniscus of said fluid inside said storage tank when said storage tank is fully filled with said fluid is substantially less than a shortest flow distance from said movable valving member to a meniscus of said fluid inside said storage tank when said storage tank is fully drained of said fluid.

9. The pressurizer as in claim 1, wherein said associated pressurant exit valve for each storage tank comprises at least one flow hole and a movable valving member configured to restrict flow through said flow hole, wherein each storage tank comprises a movable partition configured to substantially separate said fluid from said pressurant during filling and draining, wherein a shortest flow distance from said movable valving member to a surface of said movable partition when said storage tank is fully filled with said fluid is substantially less than a shortest flow distance from said movable valving member to said movable partition when said storage tank is fully drained of said fluid.

10. The pressurizer as in claim 1, wherein said associated pressurant exit valve for each storage tank has a total flow cross sectional area that is at least one-tenth of a maximum cross sectional area of said storage tank in a direction perpendicular to a flow direction of said fluid inside said storage tank.

11. The pressurizer as in claim 1, wherein said associated pressurant exit valve for each storage tank comprises at least one flow hole and a movable valving member configured to restrict flow through said flow hole, wherein each storage tank comprises a movable partition configured to substantially separate said fluid from said pressurant during filling and draining, wherein a square root of a total flow cross sectional area of said associated pressurant exit valve is greater than a shortest flow distance from said movable valving member to a surface of said movable partition when said storage tank is fully filled with said fluid.

12. The pressurizer as in claim 11, wherein said square root of said total flow cross sectional area of said associated pressurant exit valve is greater than ten times said shortest flow distance from said movable valving member to said surface of said movable partition when said storage tank is fully filled with said fluid.

13. The pressurizer as in claim 1, wherein said associated propellant exit valve for each storage tank has a total flow cross sectional area that is at least one-fourth of a maximum cross sectional area of said storage tank in a direction perpendicular to a flow direction of said fluid inside said storage tank.

14. The pressurizer as in claim 1, wherein said associated propellant entrance valve for each storage tank has a total flow cross sectional area that is at least one-fourth of a maximum cross sectional area of said storage tank in a direction perpendicular to a flow direction of said fluid inside said storage tank.

15. The pressurizer as in claim 1, wherein said pressurizer further comprises a movable partition inside each storage tank, configured to substantially separate said fluid from said pressurant, wherein said movable partition of a first storage tank is connected to said movable partition of a second storage tank, so that the cycle of the first storage tank and the cycle of the second storage tank are offset by half a cycle.

16. The pressurizer as in claim 15, wherein said pressurizer further comprises a differential piston inside each storage tank.

17. An impulse reaction engine system, comprising:
an impulse reaction engine;
a propellant tank configured to contain propellant at a low pressure;
a gas generator configured to generate pressurant at a high pressure from liquid propellants; and
a pressurizer configured to transfer propellant from said propellant tank at said low pressure to said impulse reaction engine at said high pressure in a substantially continuous flow, said pressurizer comprising:

at least two storage tanks, wherein, for each storage tank, said pressurizer further comprises:

a propellant entrance valve associated with said storage tank and connected between said storage tank and said propellant tank;

a propellant exit valve associated with said storage tank and connected between said storage tank and said impulse reaction engine;

a pressurant entrance valve associated with said storage tank and connected between said storage tank and said gas generator; and

a pressurant exit valve connected to and associated with said storage tank,

wherein each of said storage tanks is configured to be filled with said fluid under said low pressure when its associated propellant entrance and pressurant exit valves are open and its associated propellant exit and pressurant entrance valves are closed, and to be drained of said fluid under said high pressure by the force of said pressurant when its associated propellant entrance and pressurant exit valves are closed and its associated propellant exit and pressurant entrance valves are open,

wherein, for each storage tank, its associated valves are configured to be opened and closed in a cycle to sequentially fill and drain their associated storage tank of said fluid, said cycle having a cycle time,

wherein said cycles of said associated valves of said storage tanks are out of phase with each other such that at some time in which one storage tank is being filled with said fluid, at least one other storage tank is being drained of said fluid, and

wherein said cycle time for each storage tank is between 1 and 500 milliseconds.

18. The system as in claim 17, wherein said associated pressurant exit valve for each storage tank comprises at least one flow hole and a movable valving member configured to restrict flow through said flow hole, wherein each storage tank comprises a movable partition configured to substantially separate said propellant from said pressurant during filling and draining, wherein a shortest flow distance from said movable valving member to a surface of said movable partition when said storage tank is fully filled with said propellant is substantially less than a shortest flow distance from said movable valving

member to said movable partition when said storage tank is fully drained of said propellant.

19. The system as in claim 17, wherein said associated pressurant exit valve for each storage tank has a total flow cross sectional area that is at least one-tenth of a maximum cross sectional area of said storage tank in a direction perpendicular to a flow direction of said propellant inside said storage tank.

20. The system as in claim 17, wherein said cycle time is between 1 and 100 milliseconds.

21. A pressurizer for pressurizing a fluid, comprising:
a storage tank;
an accumulator;
a propellant entrance valve connected to said storage tank;
a propellant exit valve connected between said storage tank and said accumulator;
a pressurant entrance valve connected to said storage tank; and
a pressurant exit valve connected to said storage tank,

wherein said storage tank is configured to be filled with said fluid under a low pressure when said propellant entrance and pressurant exit valves are open and said propellant exit and pressurant entrance valves are closed, and to be drained of said fluid under a high pressure by the force of a pressurant when said propellant entrance and pressurant exit valves are closed and said propellant exit and pressurant entrance valves are open,

wherein said valves are configured to be opened and closed in a cycle to sequentially fill and drain said storage tank of said fluid, said cycle having a cycle time,

wherein said accumulator is configured to provide a substantially continuous flow of said fluid at said high pressure by filling with said fluid when said storage tank is draining of

said fluid, and by draining of said fluid when said storage tank is filling with said fluid, and

wherein said cycle time is between 1 and 500 milliseconds.

22. The pressurizer as in claim 21, wherein said pressurant exit valve comprises at least one flow hole and a movable valving member configured to restrict flow through said flow hole, wherein said storage tank comprises a movable partition configured to substantially separate said fluid from said pressurant during filling and draining, wherein a shortest flow distance from said movable valving member to a surface of said movable partition when said storage tank is fully filled with said fluid is substantially less than a shortest flow distance from said movable valving member to said movable partition when said storage tank is fully drained of said fluid.

23. The pressurizer as in claim 21, wherein said pressurant exit valve has a total flow cross sectional area that is at least one-tenth of a maximum cross sectional area of said storage tank in a direction perpendicular to a flow direction of said fluid inside said storage tank.

24. The system as in claim 21, wherein said cycle time is between 1 and 100 milliseconds.